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**From:** Crosby-Vega, Terri [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=E439D8D14EAF4F8DA8661E95A3037052-CROSBY-VEGA, TERRI]  
**Sent:** 2/12/2016 6:08:16 PM  
**To:** Watson, Sarah [Watson.Sarah@epa.gov]  
**Subject:** RE: FYI-Clu-in.org Munitions Training Classes

The BEM session was really good in demonstrating an alternative to current open detonation activities... The session after that was also pretty interesting about beach clean-ups...

**Terri Crosby-Vega**  
**Environmental Engineer**  
USEPA Region 4  
Atlanta Federal Center 9T25  
61 Forsyth Street SW  
Atlanta, GA 30303  
404-562-8497

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**From:** Watson, Sarah  
**Sent:** Friday, February 12, 2016 11:29 AM  
**To:** Crosby-Vega, Terri <Crosby-Vega.Terri@epa.gov>  
**Subject:** Re: FYI-Clu-in.org Munitions Training Classes

How was this? I couldn't make it. Is it worth going back to listen to the archived version?

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**From:** Crosby-Vega, Terri  
**Sent:** Wednesday, February 10, 2016 11:19 AM  
**To:** Shuster, Kenneth; Galbraith, Michael; Kohler, Amanda; Gaines, Jeff; King, Toshia; Abdul-Malik, Norma; Gerhard, Sasha; Hansen, Gail; Colon, Lilybeth; Yee, Stephen; Everett, Adolph; Azzam, Nidal; Park, Andy; Brogard, John; Ferreira, Gina; Torres, Ramon; Salgado, Angel; Negron, Luis; [John.Scott@dep.state.nj.us](mailto:John.Scott@dep.state.nj.us); [Zafar.Billah@dep.state.nj.us](mailto:Zafar.Billah@dep.state.nj.us); [Jennifer.Meyer@dep.state.nj.us](mailto:Jennifer.Meyer@dep.state.nj.us); [Anthony.Fontana@dep.nj.gov](mailto:Anthony.Fontana@dep.nj.gov); [michelle.ching@dec.ny.gov](mailto:michelle.ching@dec.ny.gov); [tjkilllee\\_gw.dec.state.ny.us](mailto:tjkilllee_gw.dec.state.ny.us); Matyskiela, Linda; Kinslow, Sara; [Ed.Hammerberg@maryland.gov](mailto:Ed.Hammerberg@maryland.gov); [Albert.Simkins@maryland.gov](mailto:Albert.Simkins@maryland.gov); [dimcdaniel@pa.gov](mailto:dimcdaniel@pa.gov); [ovazquez-m@pa.gov](mailto:ovazquez-m@pa.gov); [lhouseal@pa.gov](mailto:lhouseal@pa.gov); [vutran\\_pa.gov](mailto:vutran_pa.gov); [leslie.romanchik@deq.virginia.gov](mailto:leslie.romanchik@deq.virginia.gov); [russell.mcavoy@deq.virginia.gov](mailto:russell.mcavoy@deq.virginia.gov); [Ashby.Scott@deq.virginia.gov](mailto:Ashby.Scott@deq.virginia.gov); Housley, Denise; McKeePerez, Nancy; Zapata, Cesar; Danois, Héctor; Gilliland, Houston; Watson, Sarah; Singh, Harbhajan; [chad.r.stevens@dep.state.fl.us](mailto:chad.r.stevens@dep.state.fl.us); [Ashanti.McBride@dep.state.fl.us](mailto:Ashanti.McBride@dep.state.fl.us); [Amy.potter@dnr.ga.gov](mailto:Amy.potter@dnr.ga.gov); [April.Webb@ky.gov](mailto:April.Webb@ky.gov); [heather.alexander\\_ky.gov](mailto:heather.alexander_ky.gov); [Edward.Malone@ky.gov](mailto:Edward.Malone@ky.gov); [johnc.combs@ky.gov](mailto:johnc.combs@ky.gov); [shaina.khan@ky.gov](mailto:shaina.khan@ky.gov); [Todd.Powers@ky.gov](mailto:Todd.Powers@ky.gov); [Daniel.Walker@ky.gov](mailto:Daniel.Walker@ky.gov); [Dale.Burton@ky.gov](mailto:Dale.Burton@ky.gov); [George.Partridge@ky.gov](mailto:George.Partridge@ky.gov); [Albert.Frakes\\_tn.gov](mailto:Albert.Frakes_tn.gov); [Jamie.Burroughs\\_tn.gov](mailto:Jamie.Burroughs_tn.gov); Blough, James; Ramanauskas, Peter; Lee, Jae; [PBANSCH@idem.IN.gov](mailto:PBANSCH@idem.IN.gov); Hendrickson, Charles; Fruitwala, Kishor; [Donelson.Caffery@la.gov](mailto:Donelson.Caffery@la.gov); [lina.saale@la.gov](mailto:lina.saale@la.gov); [Ricardo.Maestas@state.nm.us](mailto:Ricardo.Maestas@state.nm.us); [Siona.Briley@state.nm.us](mailto:Siona.Briley@state.nm.us); [Donald.Hensch@deq.ok.gov](mailto:Donald.Hensch@deq.ok.gov); [Rachel.Hanigan@deq.ok.gov](mailto:Rachel.Hanigan@deq.ok.gov); Herstowski, Ken; [RFlanary@kdheks.gov](mailto:RFlanary@kdheks.gov); [rich.nussbaum@dnr.mo.gov](mailto:rich.nussbaum@dnr.mo.gov); [bill.fanska\\_dnr.mo.gov](mailto:bill.fanska_dnr.mo.gov); [Jalal.el-jayyousi@dnr.mo.gov](mailto:Jalal.el-jayyousi@dnr.mo.gov); [Siew.Kour@nebraska.gov](mailto:Siew.Kour@nebraska.gov); [morgan.leibrandt@nebraska.gov](mailto:morgan.leibrandt@nebraska.gov); Brown, Terry; Newland, Jesse; Morlock, Nancy; [deb.anderson@state.co.us](mailto:deb.anderson@state.co.us); [cerickso@nd.gov](mailto:cerickso@nd.gov); [kevin.christensen@state.sd.us](mailto:kevin.christensen@state.sd.us); [Alan.Thompson@wyo.gov](mailto:Alan.Thompson@wyo.gov); [Jerry.Breed@wyo.gov](mailto:Jerry.Breed@wyo.gov); Zabaneh, Mahfouz; Gross, Barbara; [Deming.Diana@azdeq.gov](mailto:Deming.Diana@azdeq.gov); [Leverock.Anthony@azdeq.gov](mailto:Leverock.Anthony@azdeq.gov); [mike.eshaghian@dtsc.ca.gov](mailto:mike.eshaghian@dtsc.ca.gov);

Edward.Nieto\_dtsc.ca.gov; alejandro.galdamez@dtsc.ca.gov; Sam.Coe@dtsc.ca.gov; edaoud@dtsc.ca.gov; Antonia.Becker@dtsc.ca.gov; Meyer, Linda; Palumbo, Janice; Vazquez, Julio; Maddox, Doug

**Subject:** RE: FYI-Clu-in.org Munitions Training Classes

More information and a disclaimer for the training...see below.

Disclaimer: None of the Munitions trainings have been reviewed by EPA nor sponsored by EPA (as Clu-in.org may suggest).

**From:** Shuster, Kenneth

**Sent:** Wednesday, February 10, 2016 10:53 AM

**To:** Gerhard, Sasha <Gerhard.Sasha@epa.gov>; Galbraith, Michael <Galbraith.Michael@epa.gov>; Gaines, Jeff <Gaines.Jeff@epa.gov>; Crosby-Vega, Terri <Crosby-Vega.Terri@epa.gov>

**Cc:** Kohler, Amanda <Kohler.Amanda@epa.gov>; Wilson, Michaelle <Wilson.Michaelle@epa.gov>; Wanslow, Julie <Wanslow.Julie@epa.gov>

**Subject:** FW: Clu-in.org Munitions Training Classes

FYI...info on the Buried Explosive Model (BEM), and additional info on buried OD. We should send this to the WG also.

**From:** Craig, Harry

**Sent:** Tuesday, February 09, 2016 6:39 PM

**To:** Shuster, Kenneth <Shuster.Kenneth@epa.gov>; Gerhard, Sasha <Gerhard.Sasha@epa.gov>; Crosby-Vega, Terri <Crosby-Vega.Terri@epa.gov>; Galbraith, Michael <Galbraith.Michael@epa.gov>; Abdul-Malik, Norma <Abdul-Malik.Norma@epa.gov>; Gaines, Jeff <Gaines.Jeff@epa.gov>; Kohler, Amanda <Kohler.Amanda@epa.gov>

**Cc:** Wanslow, Julie <Wanslow.Julie@epa.gov>

**Subject:** RE: Clu-in.org Munitions Training Classes

Ken,

Buried Explosive Model (BEM) is a computer program that is used to determine the depth at which OD shots should be buried based on total Net Explosive Weight (NEW) to minimize the Explosive Safety Quantity Distance (ESQD) arc (essentially the fragmentation range) to a smaller radius. ESQDs for fragmentation are normally the limiting issue as to how close demo shots should be from people, buildings, road ways, etc.

Although buried demo shots may decrease the ESQDs, burying the detonation may increase the amount of residual explosives in soil, since it also suppresses the combustion efficiency and oxygen entrainment, and disturbs much more soil. A Canadian study (attached) also found that it increases the hydraulic conductivity of the soils in the immediate vicinity of the point of detonation by about an order of magnitude. More explosives residues in soils and higher hydraulic conductivity in the vadose zone is not necessarily a good thing from an environmental perspective.

Regards,

Harry

**From:** Shuster, Kenneth

**Sent:** Tuesday, February 09, 2016 1:47 PM

**To:** Gerhard, Sasha <Gerhard.Sasha@epa.gov>; Crosby-Vega, Terri <Crosby-Vega.Terri@epa.gov>; Galbraith, Michael <Galbraith.Michael@epa.gov>; Abdul-Malik, Norma <Abdul-Malik.Norma@epa.gov>; Gaines, Jeff <Gaines.Jeff@epa.gov>; Kohler, Amanda <Kohler.Amanda@epa.gov>

**Cc:** Craig, Harry <Craig.Harry@epa.gov>; Wanslow, Julie <Wanslow.Julie@epa.gov>

**Subject:** RE: Clu-in.org Munitions Training Classes

I see no harm in sending this to the Subp X WG. I am very familiar with their advanced (digital, georeferenced geophysical) classification work (it is good); I am somewhat knowledgeable about landfill removal actions and beach replenishment, but have no idea what they might say about these. I am not familiar with their "Buried Explosion Module (BEM)"...never heard of it.

**From:** Crosby-Vega, Terri

**Sent:** Monday, February 8, 2016 10:24 AM

**To:** Gerhard, Sasha; Shuster, Kenneth; Galbraith, Michael; Abdul-Malik, Norma; Gaines, Jeff; Kohler, Amanda

**Subject:** Clu-in.org Munitions Training Classes

*Should we share information with the Subpart X Group?*

**Military Munitions Support Services - Munitions Medley**

This will be a Military Munitions Support Services seminar with subject matter experts discussing advanced classification, the Buried Explosion Module (BEM), landfill removal action, and beach replenishment.

**Feb 11, 2016**

**1:00PM-5:00PM EST**

**18:00-22:00 GMT**



**Military Munitions Support Services - Advanced Classification**

This will be a Military Munitions Support Services seminar with subject matter experts discussing advanced classification.

**This seminar will be delivered through Adobe Connect. Click for more information.**

**Apr 21, 2016**

**1:00PM-4:00PM EDT**

**17:00-20:00 GMT**

*More Training and Munitions information:*

<https://www.serdp-estcp.org/Program-Areas/Munitions-Response>

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